

13 Years Research Life in Taiwan and COVID-19

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1. Introduction

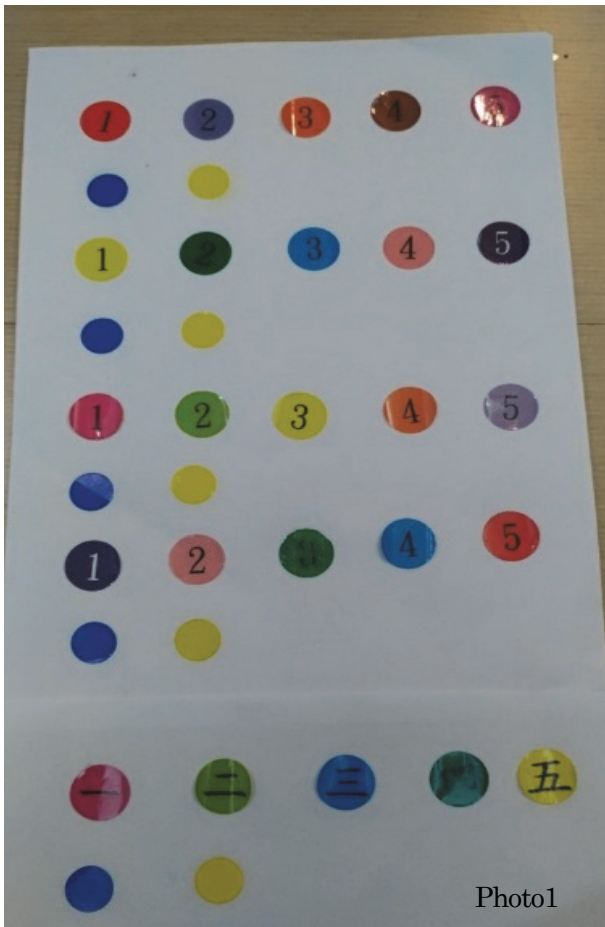
I have been staying and extending research on "Optical Force Chemistry at Solution Surface" in NCTU after I retired from Osaka University in 2008. Also, I have devoted a lot of effort to make NCTU more visible in Science and in Japan. My life and research are based on frequent international travels. However, everything has been changing much, and those nice days seem to have passed away. With COVID-19 spreading all over the world, universities, academies, their ideals and evaluations are changing and will change significantly. Taiwan is now attracting worldwide attention as a democratic country with minimal COVID-19. The current COVID-19 situation makes me, as a researcher who has been looking at Japan and Taiwan, think about the future development of society, customs, universities, and international relations. Fortunately, I would like to take the opportunity to write about Taiwan's dynamism in the society, science and technology, and academia.

2. The dynamism of Taiwanese society and its anti-COVID-19 measures

I am writing this manuscript in December 2020. Taiwan has a population of 23 million people, and the number of COVID patients to date is about 760. Among democratic

countries where people can behave freely and selfishly, Taiwan is a rare country that has succeeded in anti-COVID-19 measures. The author has frequently traveled back and forth between Japan and Taiwan for the past 13 years. When I returned to Taiwan at the end of February this year, and was preparing to start classes for the new semester, I was suddenly told, "You can't hold classes or seminars for two weeks after entering Taiwan." When I went to the hospital about a week after I arrived in Taiwan, the receptionist scanned my health insurance card and immediately said, "It's been less than two weeks since you returned to Taiwan from abroad. Therefore, you cannot see a doctor. Please go home soon." In Taiwan, insurance card data exchanges link with passport data. At that time, I lived in a staff dormitory on campus. A dormitory assistant usually works from 8 am to 5 pm. She takes a rest on Saturdays and Sundays. However, the university suddenly increased the number of assistants, and the assistant stayed there all day long after Covid-19. It is a quick response. Shortly after the beginning of March, the assistant started measuring our temperature every morning. If I have no fever, they will give us a small sticker. I put this on a prominent place on my shirt, and then I could enter any building in the school, a cafeteria, or a convenience store. If not put, a staff member will measure my temperature each time I enter any buildings. One day, when I forgot to measure the temperature

and went to the laboratory, I received a confirmation call from the dormitory.



(Photo1) Stickers that people can get if they are OK with the temperature check. Colors and numbers change every day. This system was terminated around May when the safety of Taiwan was confirmed.

The color of the sticker changes every day, so the check is perfect. Photo1 shows a collection of stickers for several weeks. While regulations such as temperature measurement, masks (Photo2), and Social Distance have begun, the iRun campaign to run the campus together once a week also started. I said “iWalk” and walked around the campus for two laps, 2.1 kilometers each time. I participated more than ten times (Photo3), so I got an iRun T-shirt. In Taiwan, while

strict regulation of daily activities, exercise events for health are planned. When I told my American friend about this, she said, “Your University is cool.” Regulations have been relaxed since summer, but the school shuttle bus and city bus are not available to people without masks still in December. The Central Epidemic Command Center (CECC) of the Ministry of Health and Welfare seems to have ordered such quick responses to COVID-19. Mr. Chen Shih-Chung, Minister of Health and Welfare, Taiwan, held press conferences many times a day. He became a hero of the time, along with Audrey Tang, 41 years old, a digital minister.



(Photo2) Masks purchased online with health insurance card and credit card numbers. 9 masks per person per two weeks for 52 NTD (1 NTD is about 3,5 JPY), delivered to the nearest convenience store in the school.

I returned to my home in Osaka in mid-September. After I quarantined at home for two weeks, I worked for a week and returned to Taiwan. I experienced a two-week quarantine life in Hsinchu's apartment again. By comparing the two quarantine lives in Japan and Taiwan, we can see the difference in the two countries' management systems. In Japan, people somehow loosely monitor each other. And it is mainly due to self-regulation that comes from the national character of hating to bother others. Taiwan,

on the other hand, is taking dynamic organizational measures. When I returned to Japan from Taiwan, I went to Taiwan Taoyuan Airport. At the time of departure, it was no difference from usual. Of course, the Japanese can return to Japan without any problems. Taiwan is not a dangerous area, so the Japanese government does not request us anything before departure. After arriving at Kansai International Airport, I lined up for a PCR test using saliva and waited for the results. Two hours after landing, I finished everything I had to do, and I could go outside. Arrived people are told not to use public transport, but no one manages it. I had an acquaintance pick me up. Every day from the next morning, the Ministry of Health, Labor and Welfare returnee follow-up staff asked questions on the app and inquiries by phone. My interaction with them lasted for two weeks. However, how you actually act is entirely up to your personal conscience.

On the other hand, when I returned to Taiwan, the person who had an Alien Residence Certificate did not need a PCR test in advance, so I went to Kansai International Airport without doing anything. At the same time as showing my passport at the check-in counter, an airline officer asked me to open the LINE on my smartphone, download the Taiwanese Quarantine Electronic Report Certificate, and enter my personal information in it. When I arrived at Taiwan Taoyuan Airport, the airport officer asked me to connect my smartphone to the internet. Looking at the line on my smartphone, I had already received a "COVID 19 Health Declaration and Home Quarantine Notice" and a "Health Declaration Certificate". I showed this to the airport officer and proceeded to the quarantine station, and

entered Taiwan smoothly. When I picked up my luggage and went outside, an officer led me to a quarantine taxi stand. Here, an officer disinfected not only the big baggage but also all clothes and the soles of shoes. The Taiwanese government paid a little less than half the quarantine taxi fare. Arriving in front of the apartment, I went straight to my room and started a two-week quarantine life.

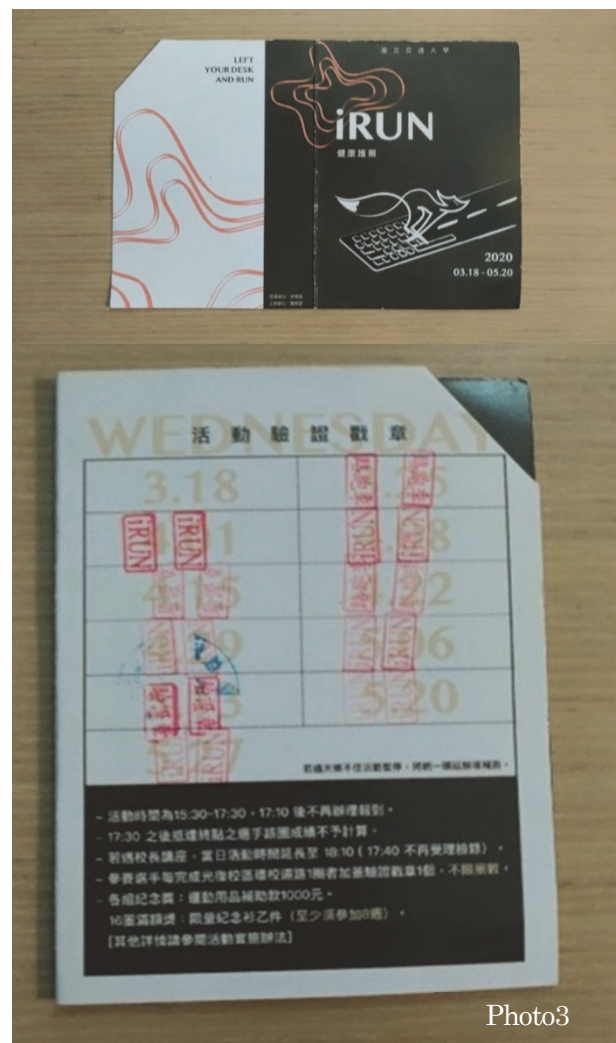


Photo3

(Photo3) Every Wednesday, between 3:30 p.m. and 5:30 p.m., you can get a stamp for every 2.1 km, and if you participate 10 times, you can get a T-shirt with "iRun" on it. I received two stamps at a time. I got two stamps at a time, i.e. 4.2km at a time, but I enjoyed the iWalk, not the iRun.

The next day, I started to report my health status to CECC every morning at 10:00 am on LINE. Meanwhile, a foreign affairs police officer in Hsinchu City sent me her identification on LINE and asked me to send my passport photo on LINE. That morning, two female police officers came to my room with a grocery set distributed by the government (Photo4), which is useful for quarantine life. They took a picture of my face from outside the door. They also asked me to fill out a health status form and send it to them every day. Every afternoon I wrote on the form that there was no change in my health status, took a picture of it, and sent it on LINE. The officer in charge was a woman, and each time I sent it, I received a thank you response with a cute stamp. It was a relaxing moment. A week later, halfway through the quarantine period, the CECC and the foreign affairs police officer called me to confirm my health status and then came to my house again to take another face photo. They were very kind, and I was glad to have someone to talk to for a moment during the quarantine. After two weeks, I was able to get out of my room. However, I still needed to spend one more week before I go to the university. During this week, I could not have any classes or seminars. The university has been very thorough in its response. The Taiwanese government has prepared such responses based on its experience during the severe pneumonia SARS epidemic of 2002-2003. During the quarantine, I felt stressed that the government was monitoring me and restricting my behavior. However, I could feel their compassion. I was strongly impressed by the Taiwanese government's dynamic and proactive management for COVID-19, as well as the Taiwanese community's willingness to cooperate.

3. COVID-19 will change the research world, and a generational shift is underway

Local wars, terrorism, earthquakes, typhoons, floods put people's lives in danger and severely damage their surroundings. The damage, however, is still limited to the people involved. COVID-19 is experienced by the entire world simultaneously. In almost every country in the world, people are stopping traveling and visiting simultaneously, losing their jobs simultaneously, people's research activities are stopping simultaneously, schools are changing to online classes at the same time. It is happening all over the world at the same time, and everyone is experiencing it simultaneously. And the economy is getting worse, companies are losing money, and the country's income is decreasing. Suppose this situation continues for a few years longer. In that case, I believe that society, economy, population, technology, academia, and universities will suffer the same level of severe damage as in World War II. After the end of World War II, our generation grew up hearing people say, "I grew up before the war, so...", "I grew up during the war, so..." or "I grew up after the war, so...". In the same way, after 20 years, we will probably hear the same lines. "I grew up before COVID-19, so...", "I grew up during COVID-19, so...", or "I grew up after COVID-19, so...". I think we are at such a significant turning point in time. What will happen to chemical research then? I will try to remember the old days.

Before and for a while after World War II, people said that chemical research was a

study of experience. However, that changed dramatically with World War II. The elders quickly lost their power, and up-and-coming young professors in their thirties began to emerge. Chemical research was transformed into a logical discipline based on quantum mechanics. However, on further reflection, the logic of the discipline was not changed by the war. It was always in that trend. World War II seems to have been the catalyst for a great acceleration of that trend not only in Japan but also in Europe and the United States. Now let's consider the future of chemistry research by analogy. I think that COVID-19 will realize what I have predicted about the future development of chemistry. COVID-19 will accelerate the trend of academics, and there will be a great leap forward. People say that one of them is AI-based chemical research after COVID-19. Just as there was a shift from the chemistry of experience before the war to the chemistry of quantum mechanics-based logic after the war, I predict that main stream of chemistry research will move toward AI-based studies after COVID-19.

On the other hand, how will COVID-19 change the international collaborative research system, which is especially essential for basic research in Taiwan. After World War II, the internationalization of research has been a consistent trend that can never reverse. I also think so and have worked hard to develop my research life in such a way and to accelerate it in Taiwan. I started my research in Taiwan in 2008. During the next three years, I also had a laboratory at Nara Institute of Science and Technology. The simultaneous pursuit of overlapping topics in Taiwan and Japan has been very effective in both research and graduate education. This

situation also gave me the experience of double funding. Later, I promoted Double Degree programs with the Katholieke Universiteit of Leuven in Belgium, Saitama University, and Nara Institute of Science and Technology in Japan, etc. Besides, I believe that Double Appointment should be realized. In Taiwan, NCTU has established the deepest and most extensive research collaboration with Japanese universities.¹⁾ Many young Japanese people have worked here at NCTU for a few years. They have taken their experience as a career path²⁾ to return to their universities in Japan to develop their research. I have invited many Japanese professors to Taiwan, set up summer courses in collaboration with Japan's Grant-in-Aid for Scientific Research (Kakenhi), and offered a research school for Japanese graduate students.³⁾ I have also recommended young Taiwanese professors to be invited to international conferences and laboratory seminars in Japan. In the past few years, about 130 students from Super Science High School in Japan have been visiting NCTU every year for overseas study. We have made NCTU more visible in Japan.⁴⁾ I attended as many meetings in Japan as I could from Taiwan as if I were coming to Tokyo or Sapporo from Osaka. The flight from Taiwan to Osaka only takes a little over two hours. The flight time is comparable to the flight time from Osaka to Sapporo. But that still takes time, so I have been trying to buy time by living in campus housing and working on weekends. However, my internationalization strategy is no longer possible with COVID-19.

As long as the current situation does not return to what it was before COVID-19, my model for the existing internationalization

before COVID-19 will not be viable. Even if COVID-19 disappears in a few years, society, academia, universities, and research conditions will not retrieve the former state. Predicting post-war society during World War II would have been difficult. Also, Predicting and preparing for post-COVID-19 research and education in the midst of COVID-19 is not easy. For the time being, people have no choice but to get through this situation by having discussions and meetings in Zoom. But in this way, people can not do more than keep their existing relationships. There are master students who can only experience presentations online. Unfortunately, I can not give them the reality of an international conference. They will join the company next summer without any real experience of attending international conferences and start manufacturing online or doing business online. After all, we cannot raise a child online. Research and education cannot be done online forever. As long as I am in Taiwan, I want to continue to try to understand what Taiwanese dynamism is and prepare for post-COVID-19.

4. What COVID-19 suggests

Taiwan has succeeded in minimizing the damage of COVID-19 while protecting its free democratic society. At first, I thought it was just a success against infectious diseases. As time passed, it has turned out to be a remarkable success in Taiwanese society. Needless to say, Taiwan is a free society with a democratic rule of law. However, I think that democracy in Taiwan is different from the liberalism of southern Europe, where people oppose the lockdown and say, "I want to go out for dinner or a drinking party at night". In Taiwan, there seems to be some

great mechanism. Although Japan is a democratic country and people are serious about obeying the law, the situation changes during the debate about how to do it fairly, equally, and without fail. Their measures often fall behind. Fortunately, the relationship is so strong in Japanese society that the situation is never the worst. In Taiwan, society changes quickly. Taiwanese society is capable of quickly detecting changes in circumstances. Those in authority are also always sensitive to change and have the dynamism to take action ahead of time. As a Japanese researcher, I will keep a close eye on the development of Taiwanese society and Taiwanese science and technology during and after COVID-19.

Another significant world change that has come to be understood by the coronavirus epidemic has a lot to do with Taiwan's choice. Taiwan has many science parks around the country. The oldest and most famous is the Hsinchu Science Park. Among them are the NCTU, National Tsing Hua University, National Synchrotron Radiation Research Center, National Center for High-performance Computing, and Taiwan Instrument Research Institute. In this aspect, the Hsinchu Science Park is similar to the Tsukuba Science Park. The difference is that Taiwan Semiconductor Manufacturing Company, Ltd., and other leading Taiwanese electronics companies have not only their laboratories but also manufacturing plants. We can learn about the latest global trends in science and technology at the Science Park in Hsinchu.⁵⁾ Why? Taiwan is basically in line with the U.S. global strategy in science and technology. In the 80s, IBM stopped manufacturing personal computers by themselves. After that, the United States

decided to manufacture their hearts in the United States, their peripherals in Taiwan, and assemble them in China. In Taiwan, the Hsinchu Science Park was responsible for manufacturing the peripherals for personal computers. Since then, Taiwan's electronics industry has developed dramatically and surpassed Japan's. Nowadays, there is a global competition for 5G dominance, AI technology, and internet technology. Looking at the United States' recent global strategic measures, I feel that "something" reminiscent of the United States' decisions in the 80s is going on in the United States under the current COVID situation. The reconfiguration of the supply chain is an example of "something" that is easy for us to understand.

I have written about my thoughts while comparing the experiences in Japan and Taiwan under the COVID-19 epidemic, which is comparable to the devastation by World War II. In the era of significant changes caused by COVID-19, the sooner we detect and respond to them, the better our chances of survival after COVID-19. I hope that the flexible nature and the academics of NCTU will create a new path suitable for the post-COVID-19 era and take the leadership of the post-COVID-19 world as quickly as possible.

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Photo4

(Photo 4) Those who enter Taiwan must be quarantined at home or in a designated hotel for two weeks. If they step out of the quarantine area, they can be fined between 350,000 and 3.5 million JPY On the first day of quarantine, two female policewomen of the Hsinchu City Foreign Affairs Police gave me this bag and took my mug shot. From left to right: garbage bag, thermometer, face mask. From top right: canned foods, drip coffees, crackers, retort pouch curry and instant noodles